

Form PTO 1449 (Rev. 2-32)		U.S. Department of Commerce Patent and Trademark Office		Atty. Docket No. IMMR-0091B (034701-562)		Serial No. 10/671,465	
 Information Disclosure Statement by Applicant (Use several sheets if necessary)				Applicant: Alex S. Goldenberg et al.			
				Filed: 09/29/2003		Group: 2629	
U.S. Patent Documents							
	Document No.	Date	Name	Class	Subclass	Filing Date	
/S.M./	3,623,046	11/23/1971	Scourtes				
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Examiner /Seokyun Moon/				Date Considered 06/20/2008			
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(Use several sheets if necessary)						Filed: 09/29/2003		Group: 2629	
<b>Foreign Documents</b>									
								Translation	
Init.		Document No.	Date	Country	Class	Subclass	Yes	No	
<b>Other Documents (Including Author, Title, Date, Pertinent Pages, etc.)</b>									
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Examiner						Date Considered			
/Seokyun Moon/						06/20/2008			
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Substitute for form 1449A/PTO		Complete if Known		
<b>INFORMATION DISCLOSURE STATEMENT BY APPLICANT</b> (use as many sheets as necessary)		Application Number	Unknown	
		Filing Date	September 29, 2003	
		First Named Inventor	Alex S. GOLDENBERG	
		Group Art Unit	2673	
		Examiner Name	Unassigned	
2	of	4	Attorney Docket Number	IMMR-073/02US

FOREIGN PATENT DOCUMENTS						
Examiner Initial*	Cite No. <sup>1</sup>	Foreign Patent Document			Name of Patentee or Applicant of Cited Document	Date of Publication of Cited Document MM-DD-YYYY
		Office <sup>2</sup>	Number <sup>3</sup>	Kind Code <sup>3</sup> (if known)		
A	B1		0 349 086	A1	Sterk Kwast B.V.	01/03/1990

- <sup>1</sup> Enter Office that issued the document, by the two-letter code (WIPO Standard ST.3).  
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3 of 4

Complete if Known

Application Number	Unknown
Filing Date	September 29, 2003
First Named Inventor	Alex S. GOLDBERG
Group Art Unit	2673
Examiner Name	Unassigned
Attorney Docket Number	IMMR-473/02US

## OTHER PRIOR ART - NON PATENT LITERATURE DOCUMENTS

Examiner Initials*	Cite No. <sup>1</sup>	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.	T <sup>2</sup>
	C1	Balgrie, "Electric Control Loading - A Low Cost, High Performance Alternative," <i>Proceedings of Interservice/Industry Training Systems Conference</i> , pp. 247-254, November 6-8, 1990	
	C2	Iwata, "Pen-based Haptic Virtual Environment," 0-7803-1363-1/93 IEEE, pp. 287-292, 1993	
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Substitute for form 1449A/PTO		Complete if Known		
<b>INFORMATION DISCLOSURE STATEMENT BY APPLICANT</b> (use as many sheets as necessary)		Application Number	Unknown	
		Filing Date	September 29, 2003	
		First Named Inventor	Alex S. GOLDENBERG	
		Group Art Unit	2673	
		Examiner Name	Unassigned	
4	of	4	Attorney Docket Number	IMMR-073/02US

<input checked="" type="checkbox"/>	C25	Rabinowitz et al., "Multidimensional tactile displays: Identification of vibratory intensity, frequency, and contractor area," <i>Journal of The Acoustical Society of America</i> , Vol. 82, No. 4, October 1987	
<input checked="" type="checkbox"/>	C26	Bejczy et al., "Kinesthetic Coupling Between Operator and Remote Manipulator," <i>International Computer Technology Conference, The American Society of Mechanical Engineers</i> , San Francisco, CA, August 12-15, 1980	
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\*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

<sup>1</sup> Unique citation designation number.

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Sheet **3** of **6**

## Complete If Known

Application Number	10/671,465
Filing Date	September 28, 2003
First Named Inventor	Alex S. Goldenberg
Art Unit	2673
Examiner Name	Unassigned
Attorney Docket Number	IMMR-073/02US

## U.S. PATENT DOCUMENTS

Examiner	Cite No. <sup>1</sup>	Document Number Number Kind Code <sup>2</sup> (if known)	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
S.M.		4,795,298	1/3/88	Jau	
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Examiner Initials*	Cite No. <sup>1</sup>	Foreign Patent Document			Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
		Country Code <sup>3</sup>	Number <sup>4</sup>	Kind Code <sup>5</sup> (if known)			
		JP	H2-185278		7/19/1990	Taito Corporation	
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		WO	02/27705		4/4/2002		

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Sheet 4 of 6

## Complete If Known

Application Number	10/671,465
Filing Date	September 29, 2003
First Named Inventor	Alex S. Goldenberg
Art Unit	2673
Examiner Name	Unassigned
Attorney Docket Number	IMMR-073/02US

## OTHER PRIOR ART - NON PATENT LITERATURE DOCUMENTS

Examiner Initials *	Cite No. 1	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.
—	0	PATRICK, "Design, Construction, and Testing of a Fingertip Tactile Display for Interaction with Virtual and Remote Environments," <i>Master of Science Thesis</i> , MIT, Aug. 1990, archived Nov. 8, 1990.
✓	✓	CALDER, "Design of A Force-Feedback Touch-Introducing Actuator For Teleoperator Robot Control," <i>Bachelor of Science Thesis</i> , MIT, May 1983, archived June 23, 1983.
✓	✓	WIKER, "Teletouch Display Development: Phase 1 Report," <i>Technical Report 1230</i> , Naval Ocean Systems Center, San Diego, July 1988.
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PTO/SB08A (10-01)  
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				Filing Date	September 29, 2003
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✓	1	"Technical Manual Overhaul Instructions With Parts Breakdown, Coaxial Control Shaker Part no. C-25502," Safe Flight Instrument Corporation, Revised 15 July 1980 (23 pages).
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✓	✓	SCHMILT, Brian et al., "Application Areas for a Force-Feedback Joystick," <i>ASME 1993, DSC-Vol. 49</i> , pp. 47-54.
✓	✓	HASSER, Christopher John, "Tactile Feedback for a Force-Reflecting Haptic Display," <i>The School of Engineering, University of Dayton</i> , December 1995, pp. iii-xii & 1-96.
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✓	✓	HASSER, C., "Force-Reflecting Anthropomorphic Hand Masters," <i>AL/CF-TR-1996-0110</i> , 1995, pp. 5-31.

Examiner Signature	/Seokyun Moon/	Date Considered	07/06/2006
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Sheet 6 of 6

## Complete if Known

Application Number	10/671,485
Filing Date	September 29, 2003
First Named Inventor	Alex S. Goldenberg
Art Unit	2673
Examiner Name	Unassigned
Attorney Docket Number	IMMR-073/02US

## OTHER PRIOR ART - NON PATENT LITERATURE DOCUMENTS

Examiner Initials *	Cite No.	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.
✓	2	Kim, Won, "Telemanipulator Technology and Space Telerobotics," SPIE Proceedings, 1993, Vol. 2057, pp. 40-50.

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		Filing Date	September 29, 2003	
		First Named Inventor	Alex S. GOLDBERG	
		Group Art Unit	2673	
		Examiner Name	Unassigned	
2	of	4	Attorney Docket Number	IMMR-073/02US

FOREIGN PATENT DOCUMENTS						
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		Office <sup>1</sup>	Number <sup>2</sup>	Kind Code <sup>3</sup> (if known)		
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	3	of	4
		Application Number	Unknown
		Filing Date	September 29, 2003
		First Named Inventor	Alex S. GOLDENBERG
		Group Art Unit	2673
		Examiner Name	Unassigned
		Attorney Docket Number	IMMR-073/02US

OTHER PRIOR ART - NON PATENT LITERATURE DOCUMENTS			
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	C1	Balgrie, "Electric Control Loading - A Low Cost, High Performance Alternative," <i>Proceedings of Interservice/Industry Training Systems Conference</i> , pp. 247-254, November 6-8, 1990	
	C2	Iwata, "Pen-based Haptic Virtual Environment," 0-7803-1363-1/93 IEEE, pp. 287-292, 1993	
	C3	Russo, "The Design and Implementation of a Three Degree of Freedom Force Output Joystick," <i>MIT Libraries Archives</i> pp. 1-131, May 1990, archived 8/14/90	
	C4	Brooks et al., "Hand Controllers for Teleoperation - A State-of-the-Art Technology Survey and Evaluation," <i>JPL Publication 85-11</i> , NASA-CR-175890; N85-28559, pp. 1-84, 03/1/1985	
	C5	Jones et al., "A perceptual analysis of stiffness," ISSN 0014-4819 Springer International (Springer-Verlag); <i>Experimental Brain Research</i> , Vol. 79, No. 1, pp. 150-156, 1990	
	C6	Burdea et al., "Distributed Virtual Force Feedback, Lecture Notes for Workshop on Force Display in Virtual Environments and its Application to Robotic Teleoperation," <i>1993 IEEE International Conference on Robotics and Automation</i> , pp. 25-44, 05/02/1993	
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	C8	Ouh-Young, "Force Display in Molecular Docking," Doctoral Dissertation, University of North Carolina at Chapel Hill, UMI Order No. 9034744, p. 1-369, 1990	
	C9	Tadros, "Control System Design for a Three Degree of Freedom Virtual Environment Simulator Using Motor/Brake Pair Actuators," <i>MIT Archive</i> , pp. 1-88, February 1990, archived 8/13/90	
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	C11	Adelstein et al., "Design and Implementation of a Force Reflecting Manipulandum for Manual Control research," DSC-Vol. 42, <i>Advances in Robotics</i> , pp. 1-12, 1992	
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	C17	Adelstein, "A Virtual Environment System For The Study of Human Arm Tremor," <i>Ph.D. Dissertation</i> , Dept. of Mechanical Engineering, MIT, June 1989, archived 3/13/90	
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	C23	Shimoga, "Finger Force and Touch Feedback Issues in Dexterous Telemanipulation," <i>Proceedings of Fourth Annual Conference on Intelligent Robotic Systems for Space Exploration</i> , Rensselaer Polytechnic Institute, Sep. 30- Oct. 1, 1992	
	C24	IBM Technical Disclosure Bulletin, "Mouse Ball-Actuating Device With Force and Tactile Feedback," Vol. 32, No. 9B, February 1990	
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		Application Number	Unknown
		Filing Date	September 29, 2003
		First Named Inventor	Alex S. GOLDENBERG
		Group Art Unit	2673
		Examiner Name	Unassigned
		Attorney Docket Number	IMMR-073/02US

—	C28	Rabinowitz et al., "Multidimensional tactile displays: Identification of vibratory intensity, frequency, and contractor area," <i>Journal of The Acoustical Society of America</i> , Vol. 82, No. 4, October 1987	
↓	C29	Bejezy et al., "Kinesthetic Coupling Between Operator and Remote Manipulator," <i>International Computer Technology Conference. The American Society of Mechanical Engineers</i> , San Francisco, CA, August 12-15, 1980	
↓	C30	Bejezy et al., "A Laboratory Breadboard System For Dual-Arm Teleoperation," <i>SOAR '89 Workshop</i> , JSC, Houston, TX, July 25-27, 1989	
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↓	C32	Marcus, "Touch Feedback in Surgery," <i>Proceedings of Virtual Reality and Medicine The Cutting Edge</i> , Sep. 8-11, 1994	
↓	C33	Bejezy, et al., "Universal Computer Control System (UCCS) For Space Telerobots," CH2413-3/87/0000/0318501.00 1987 IEEE, 1987	

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Sheet **3** of **6**

### Complete If Known

Application Number	10/671,465
Filing Date	September 29, 2003
First Named Inventor	Alex S. Goldenberg
Art Unit	2673
Examiner Name	Unassigned
Attorney Docket Number	IMMR-073/02US

### U.S. PATENT DOCUMENTS

Examiner	Cite No. <sup>1</sup>	Document Number Number Kind Code <sup>2</sup> (if known)	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
S.M.		4,795,296	1/3/88	Jau	
		4,731,603	3/15/88	McRae et al.	
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		RE37,374	9/18/01	Roston et al.	

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		Country Code <sup>3</sup>	Number <sup>4</sup>	Kind Code <sup>5</sup> (if known)			
		JP	H2-185278		7/19/1990	Taito Corporation	
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		EP	0265011		4/27/1988		
		EP	0626634	A2	5/11/1994		
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		WO	01/24158		4/5/2001		
		WO	97/31333		8/28/1997		
		WO	01/13354		2/22/2001		
		WO	98/32112		7/23/1998		
		WO	99/40504		12/8/1999		
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Sheet **4** of **6**

### Complete If Known

Application Number	10/871,485
Filing Date	September 29, 2003
First Named Inventor	Alex S. Goldenberg
Art Unit	2673
Examiner Name	Unassigned
Attorney Docket Number	IMMR-073/02US

### OTHER PRIOR ART – NON PATENT LITERATURE DOCUMENTS

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—		PATRICK, "Design, Construction, and Testing of a Fingertip Tactile Display for Interaction with Virtual and Remote Environments," <i>Master of Science Thesis</i> , MIT, Aug. 1990, archived Nov. 8, 1990.
↓		CALDER, "Design of A Force-Feedback Touch-Introducing Actuator For Teleoperator Robot Control," <i>Bachelor of Science Thesis</i> , MIT, May 1983, archived June 23, 1983.
↓		WIKER, "Teletouch Display Development: Phase 1 Report," <i>Technical Report 1230</i> , Naval Ocean Systems Center, San Diego, July 1988.
↓		BLISS, "Optical-to-Tactile Image Conversion for the Blind," <i>IEEE Transactions on Man-Machine Systems</i> , Vol. MMS-11, No. 1, March 1970.
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↓		PIMENTEL et al., "Virtual Reality: through the new looking glass," 2 <sup>nd</sup> Edition; McGraw-Hill, ISBN 0-07-050167-X, pp. 41-202, 1994.
↓		"Cyberman Technical Specification," <i>Logitech Cyberman SWIFT Supplement to Logitech Mouse Technical Reference and Programming Guide</i> , 4/5/1994.
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